

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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GOVERNOR

SECRETARY

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STATE PROJECT:

8.1631801

R-2911A

F. A. PROJECT:

NHF-70 (39)

COUNTY:

Iredell

DESCRIPTION:

US 70 widening and relocation from SR 2318 near

Statesville to the Rowan County Line.

SUBJECT:

Geotechnical Report-Inventory

Project Description

This 8.0km project involves widening and relocation of US 70 from outside Statesville at SR 2318 to the Rowan County line. The existing US 70 is the major road between Statesville and Salisbury. New construction includes a five lane undivided highway and where new alignment occurs, a controlled access, four lane highway with a grass median. New construction includes the realignments of several intersecting roads.

The Geotechnical Unit field investigation was conducted from October 2000 to January 2001. The –L– line was investigated from Sta. 10+00 to 90+31.717. Subsurface information including standard penetration tests (SPT) was acquired with a CME-550 all-terrain-drilling machine.

The deepest cut on the project is projected to be 10.0m at -L- Sta. 54+00/CL and will be in medium stiff sandy silty clay, with A-7-5 (AASHTO classifications). The highest fill is 17m at -L- Sta. 55+25/CL and will lie on alluvial soft to medium stiff clayey A-7-5 soils. There are 5 water crossings with associated discernable alluvial soils. Two will be discussed within.

The following intervals were investigated:

Line	Station	to	Station	Total Length
-L-	10+00	to	90+31.717	8031.717
-Y-	9+93.773	to	10+48.163	54.39
-YA-	10+11.068	to	10+67.255	56.187
-Y1-	10+00	to	13+77.215	377.215
-Y2-	10+45	to	11+69.437	124.437
-Y3A-	10+00	to	10+72.337	72.916
-Y3-	10+00	to	12+31.337	231.337

3A/54

-Y4-	10+55	to	10+55.917	55.917
-Y7-	11+66.748	to	15+35	368.252
-Y8-	10+60	to	15+98.020	538.02
-Y9-	10+96.047	to	9+75	121.047
-Y10-	10+55	to	12+95	240
-Y11-	12+15	to	10+40	175
-Y12-	10+00	to	11+88.683	188.683

Total length of lines investigated was 10645.12m or 10.6km.

Physiography and Geology

The project is located in the central Piedmont region of North Carolina near the center of the Charlotte Geologic Belt. The terrain begins as urban front yards and then goes into gently rolling, clay capped hills underlain by a dense sandy intrusive light colored granitic and/or gneissic appearing rock type. Near the end the terrain becomes almost flat again. These soils also weather into clays and silts with more sand at depth.

Residual soils

Residual soils on the project are derived from two distinct geologic rock types, but can be discussed together.

The soils from the beginning to about the middle of the project are derived from fine-grained biotite gneiss and then to the end, the rock type is a metamorphosed quartz diorite. Both of these parent rock types weather deeply. These soils generally have a thin clay cap that grades into a thin silty layer (not always present), and then into an (AASHTO) medium to fine sand. Density generally increases with depth.

Alluvial soils

There are 5 areas of alluvial soils of which 2 are large enough to be addressed. The first at -L-31+00 to 32+80 will require a channel change and there will be a 5m high embankment on a one-meter thick alluvial layer of 4 blow per foot silt.

The other is at -L-44+00 to 45+00. There is a 10m embankment extending out into a floodplain having 3m of 1 B/F silt. Shelby Tubes 3 and 4 were taken here and tested for consolidation.

Rock

No rock (auger refusal) was encountered in any of the borings.

Groundwater

Ground water was encountered in one boring within 2 meters of grade at -L-60+00/CL.

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